Securing Water for All

Asia Water Week 2013

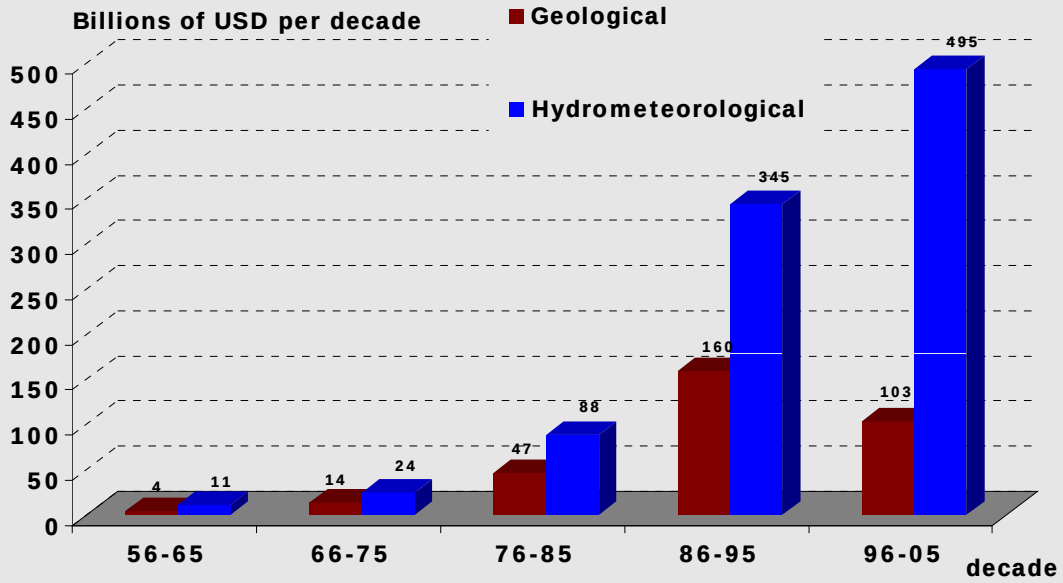
13–15 March • ADB Headquarters, Manila, Philippines

Urban Flood Management: Towards A Holistic Approach

Engineering Solutions: Are They Sufficient?

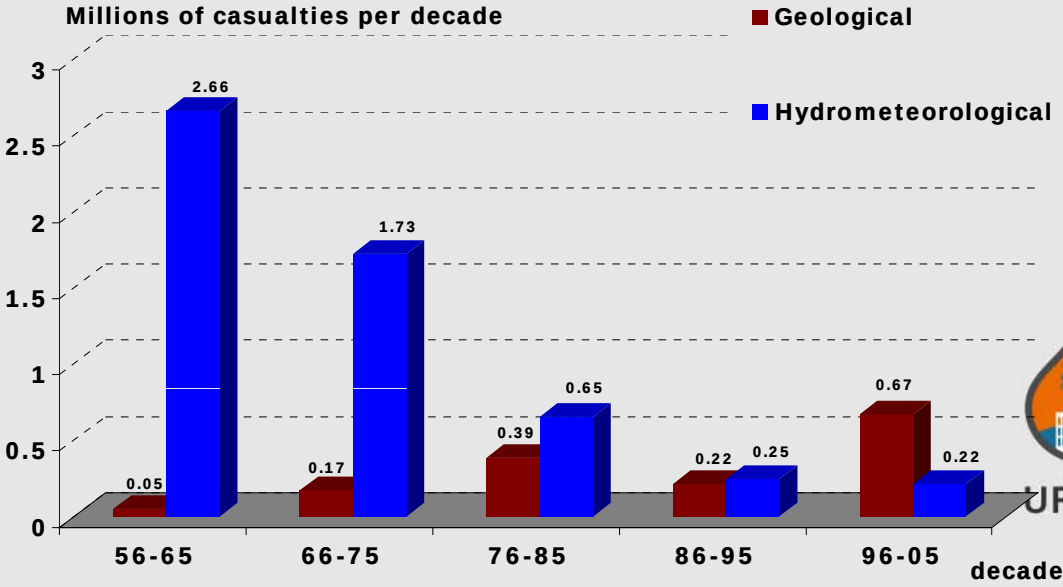
Prof. Kuniyoshi Takeuchi, ICHARM

Death Tolls Are Decreasing but Economic Losses Keep Increasing in Hydro-Met Disasters



Economic losses related to disasters are on the way up

While casualties related to hydro-meteorological disasters are decreasing



Source: EM-DAT: The OFDA/CRED International Disaster Database

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Why?

- Decreasing death tolls:
  - Early warning & evacuation
  - Flood control works, sabo works, slope protection
  - Land use regulation, education, emergency preparedness
- Increasing economic losses:
  - Exposure of vulnerable assets & activities are increasing
  - Infrastructure investment does not catch up with economic development
  - Land use planning/regulation, insurance, community preparedness etc. are insufficient
  - Interdependency of value chain, supply chain

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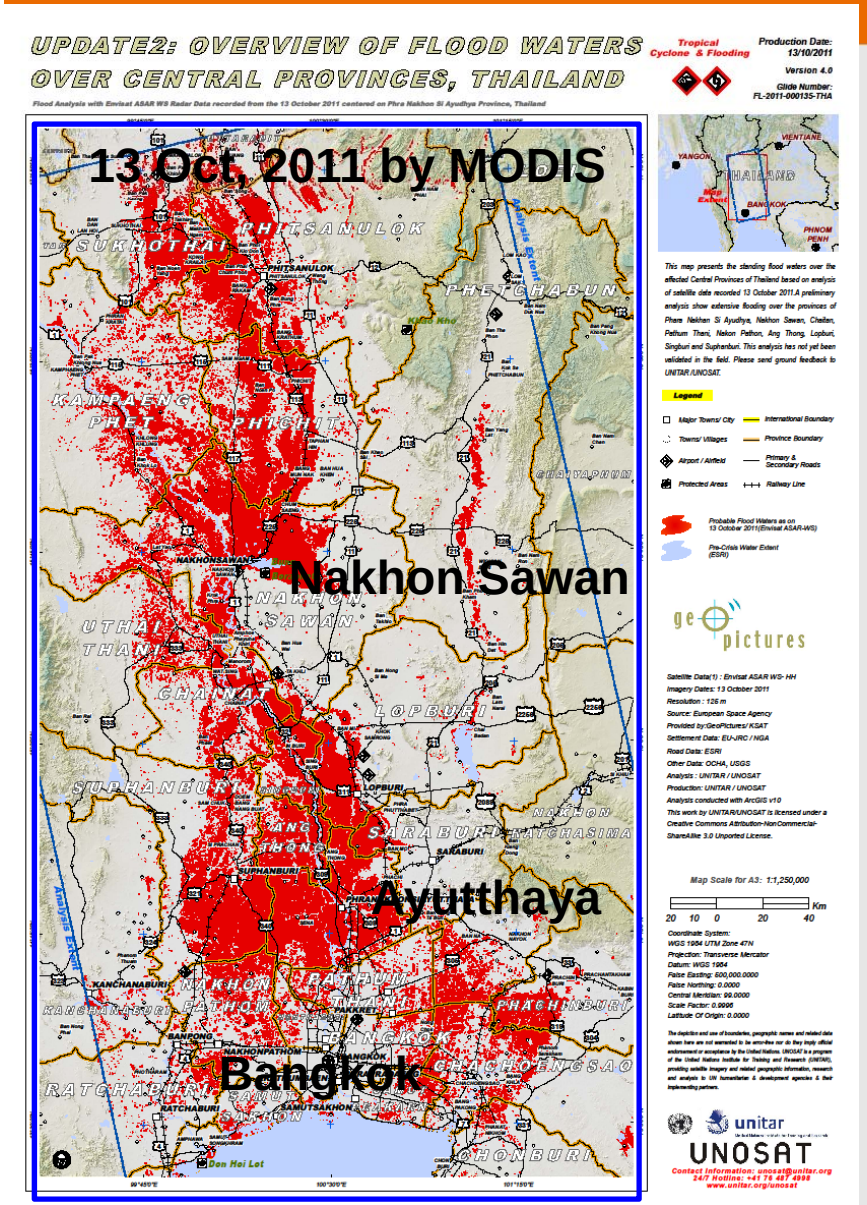
Higher level physical protection is necessary for economic development

- All societies are living with nature but their capacity of accumulating wealth depends on their controllability of hazardous nature.
- Level of physical protection determines the potential economic activity of the land.

photo: MLIT
Sep 2000 Fukuoka Station

photo: Shafiqul Islam
1 Aug 2007 Sirajgong District, Bangladesh
http://gphoto.exblog.jp/6031088/

Chao Phraya Flood 2011



- Tyhoons Nock-ten late July & 145% of average Jun-Sep of ‘08-’10
- 815 deaths (with 3 missing) and 13.6 million people affected. <EOCFSL, DPMD, MI>
- Evacuation around 20 Oct – Mid Dec in BKK
- Economic damages
  - 20,000 km^2 of farmland & 7 industrial complexes with 460/3100 JP companies (700 all together)
  - **Toyota, Honda, Western Digital, Hitachi, Canon, Nikon, Nissan, Sony, Toray, TDK, Kubota, Nidec, Hoya**
  - Market share of HDD was 30%, 2nd in the World.
  - US$ 45.7 B, the 5th worst after GEJET (235-309), Hanshin (100), Katrina (81), Sandy (62, NYS Gov) <by WB>

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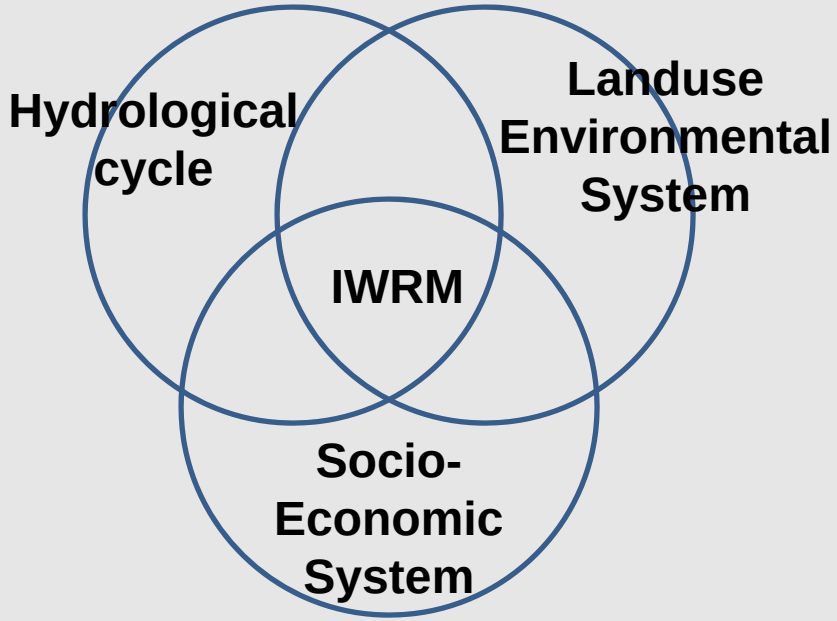
Chao Phraya Flood, Aug-Nov 2011

Engineering Solutions: Are They Sufficient?

- No, not at all!
- Engineering solutions work only with good governance, integrated water resources management and sustainable holistic societal system.



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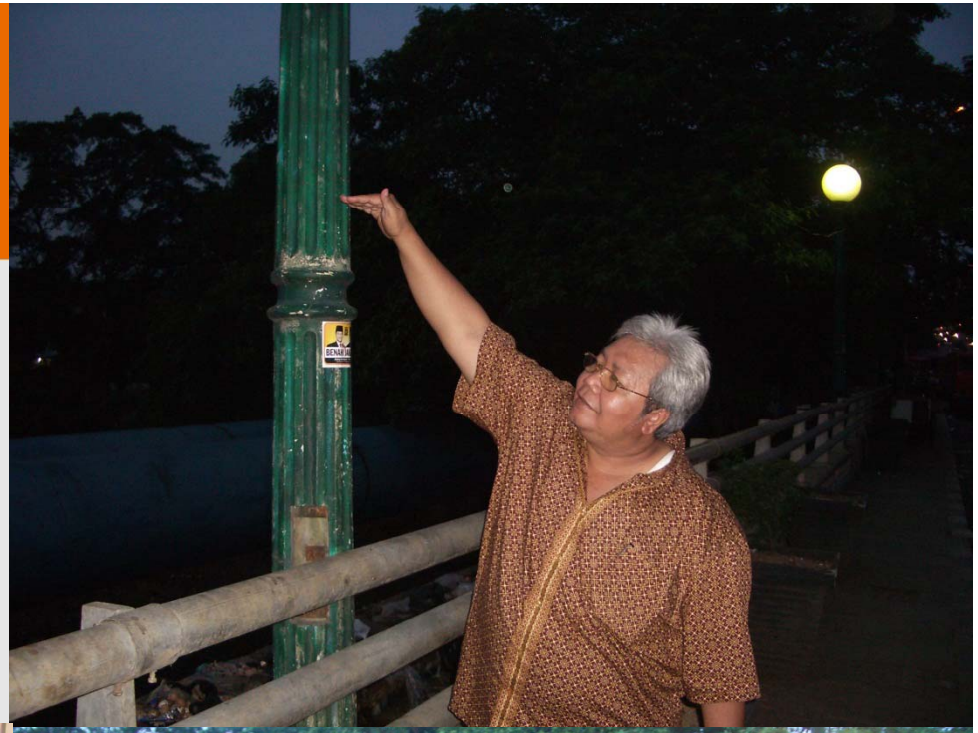
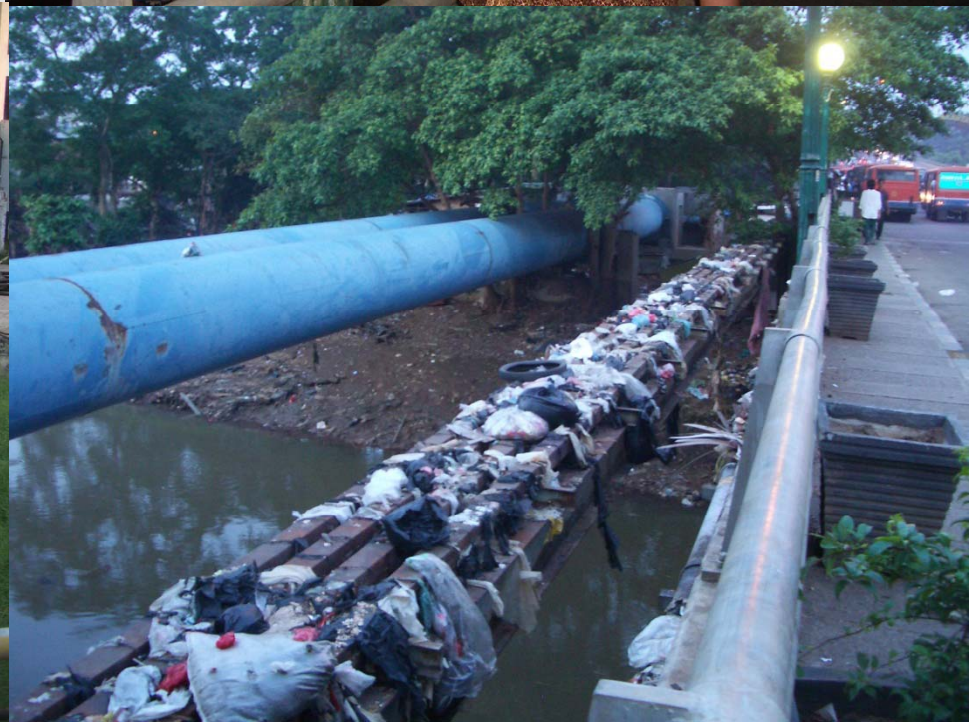
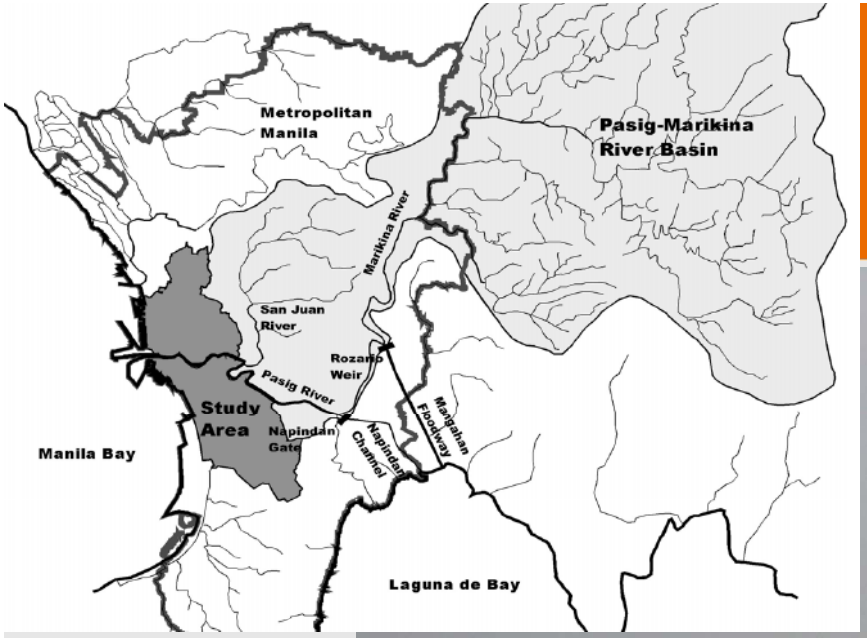
Illegal Housing over River/River Courses

Debris Dam up & Flood



25 May 2007, Jakarta



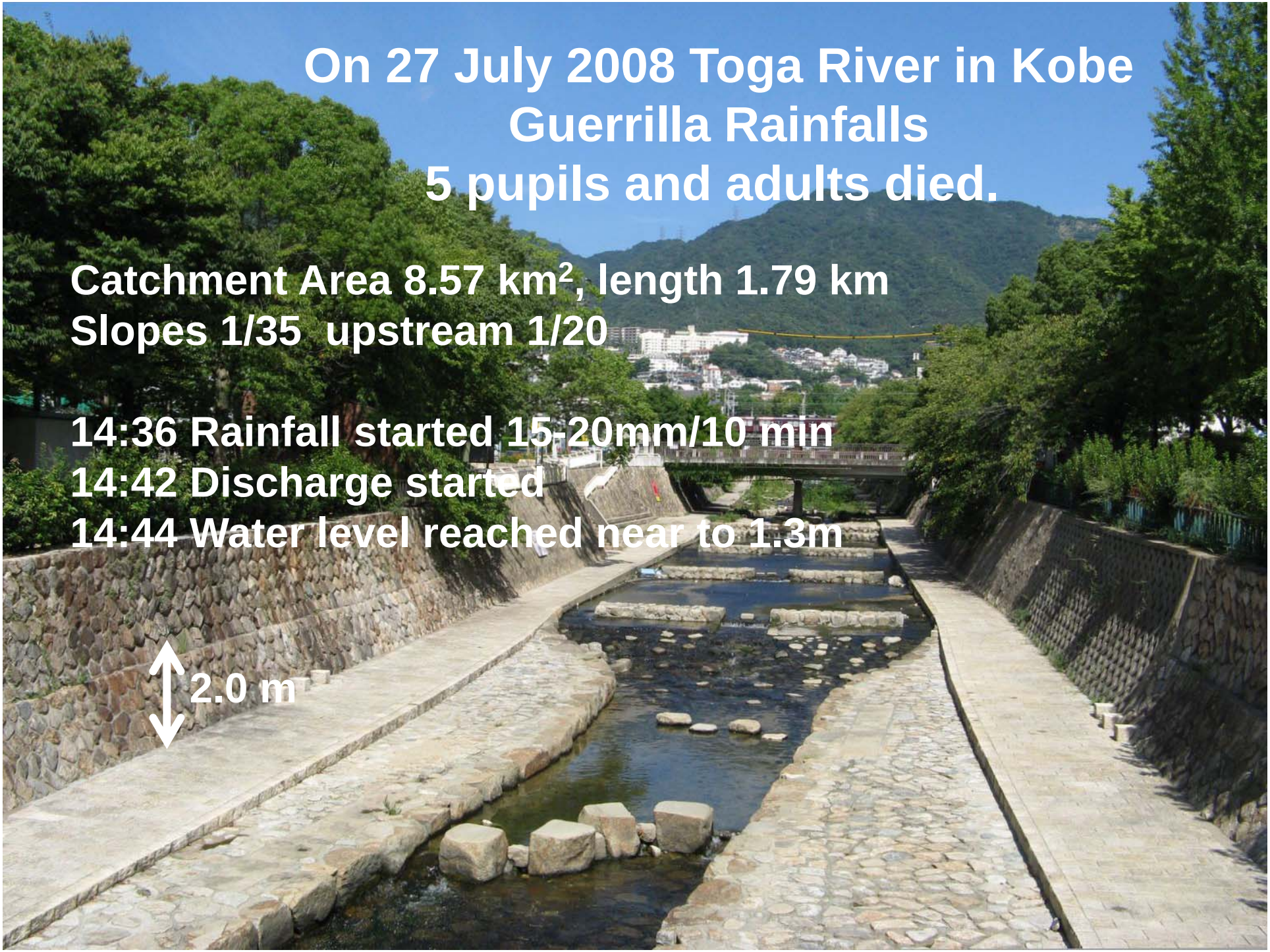


Mangahan Floodway in Metro Manila

28 May 2007

Over Housing and Land Subsidence

Jakarta 3 Feb 2007 - JP post (left) & BBC (above)


On 27 July 2008 Toga River in Kobe
Guerrilla Rainfalls
5 pupils and adults died.
Catchment Area 8.57 km², length 1.79 km
Slopes 1/35 upstream 1/20
14:36 Rainfall started 15-20mm/10 min
14:42 Discharge started
14:44 Water level reached near to 1.3m
2.0 m

Engineering Solutions – Are they sufficient? No, not at all!

- Engineering solutions are essential but effective only with many non-engineering actions: before, during and after
- Disaster risk reduction is basically a political issue: land use regulation, environmental management, early warning, emergency responses, evacuation & preparedness drills, recovery policy, insurance & public subsidy, education, above all, **monitoring risk** …

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Engineering Solutions – Are they sufficient? No, not at all!

- Needs mainstreaming DRR in policy making.
- Public awareness raising is the basis.
- Governance in DRR and disaster management.
  - WMO mission to Myanmar right after the Nargis in May 2008 “Cyclone warnings were sufficient. Deaths inevitable”. 138 000 died.
  - N Ambraseys and R Bilham “Corruption kills”, Nature, 13 Jan 2011

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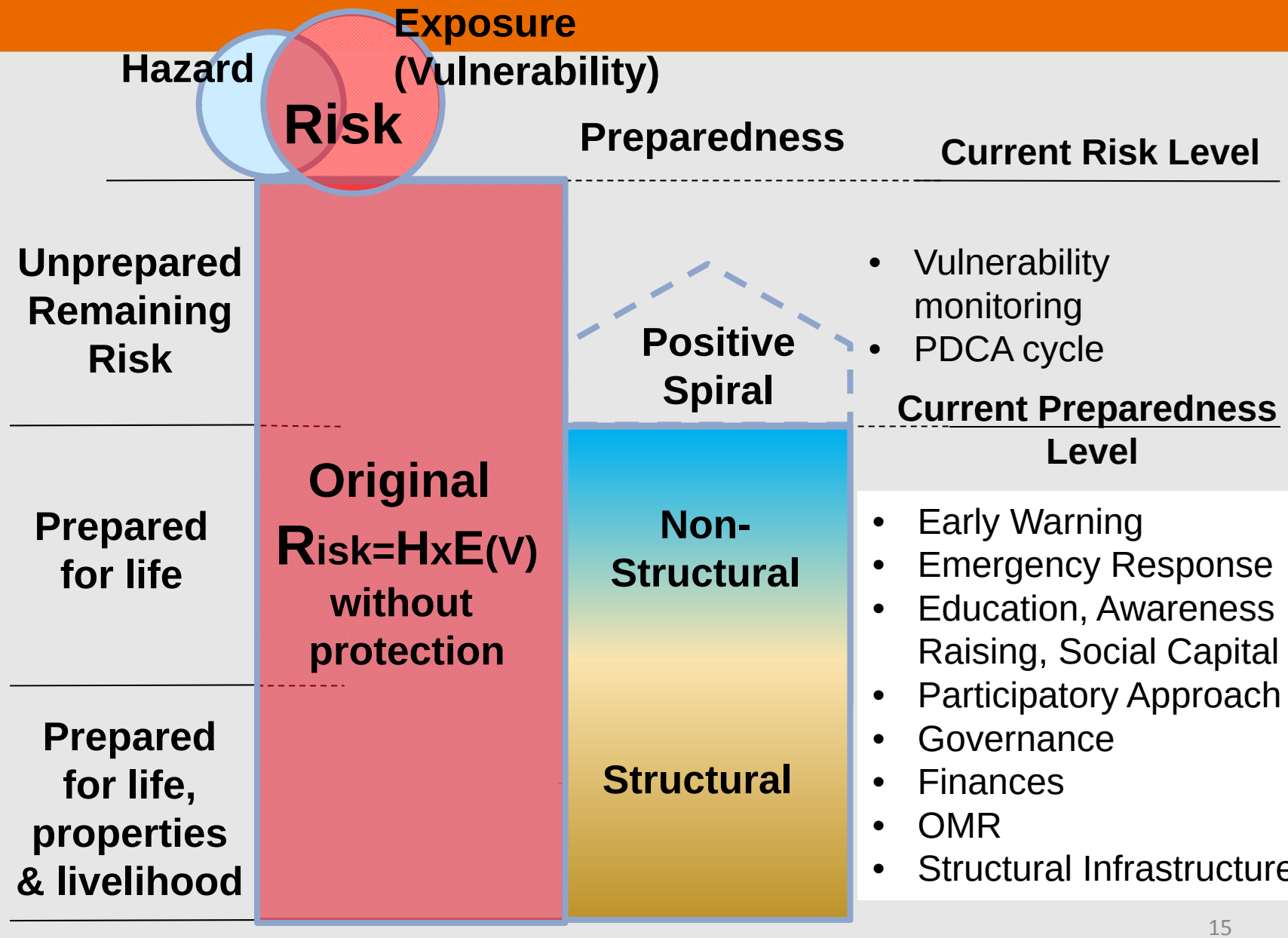
Monitor Disaster Risk & Preparedness



Agenda for post-Hyogo & post-MDGs/SDGs

SDG Target by 2030 proposals

- Halve the population exposed to high disaster risk of natural hazards.
- Provide universal access to the basic early warning for extreme natural hazards.

Post-HFA 2015-1025 proposals

- Establish standard methodologies of monitoring risk, vulnerability and preparedness.
- Establish an institutional system to implement risk monitoring & risk reduction.
- Stronger political action based on scientific knowledge.

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居安思危 Be aware of risk while we are safe

思則有備 Awareness leads us preparedness

有備無患 Preparedness leaves us no regret

「春秋」左氏伝
Source： Zuo Qiuming “Zuoshi Commentary” in Confucius ed. ”Spring and Autumn”, 480BC

Let us ally for post-2015 and DRR

UN WATER World Water Day 2015 International Year of Water Cooperation

UNSGAB/HLEP

IRDR Integrated Research on Disaster Risk

World Water Council

UNESCO-IHE Institute for Water Education

ADB

ICIWaRM

MLIT

UNESCO United Nations Educational, Scientific and Cultural Organization

UNITED NATIONS UNIVERSITY UNU-EHS Institute for Environment and Human Security

GFDRR

OECD

IAHS AISH

IAHR AIRH

Future Earth

ICSU International Council for Science

ISDR

ISSC international social science council

ICHARM

Rijkswaterstaat Ministerie van Verkeer en Waterstaat

bfg Federal Institute of Hydrology